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IRON AGE METALS PRODUCER

OCTOBER 1987

JOHN McCONNELL

A NEW STEEL MILL FOR WORTHINGTON?

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HIGHER PRODUCTIVITY ON THE PICKLING LINE

IRON AGE
METALS PRODUCER

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LETTERS

Electroslag Remelt

With reference to your article on electroslag casting (May issue), I would add to your historical statements that ESR (electroslag remelting), as we know it today in the Western World, was pioneered in the '60s largely by the ESRT team at the British Iron and Steel Research Assn. in Sheffield and also by Dr. Alex Mitchell at the University of Sheffield. He moved subsequently to U.B.C. and headed what is now the recognized center of technology for ESR.

The ESRT group, in conjunction with Consarc Corp., brought much of the ESR technology to this country.

P. Dewsnap
236 Springbrook Trail
Sparta, N.J. 07871

MBAs in Charge

Your July editorial may draw a lot of criticism, but thank God someone had the guts to identify one of the many real problems of the basic steel industry.

In 35 years with a major producer I witnessed the takeover dynasties of MBAs. Their lack of knowledge of manufacturing and the technical aspects of steel as an engineering material forced the abandonment of major portions of the market (alloy and stainless) with the concurrent elimination of R&D and technically competent manufacturing and sales support personnel.

Only two major producers mainained the professional staff necessary to maintain a product line other than "plain vanilla," as Bill Roesch aptly put it.

When I heard the MBAs' open proclamation that successful management of a steel company does not require detailed knowledge of the business, I knew the end was in sight.

Elgin Van Meter
Manager, Quality Assurance
Valley City Steel
Valley City, Ohio

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erage 12 heats a day and, for BOP production, to average 26 to 28 heats a day. The BOP vessels are rated at 225 tons.

With that operating rate, Mr. Fravel said, the caster will exceed its design capacity.

Steel not continuously cast at Lorain is made into bottom-poured ingots, he said.

In addition to raising steel temperatures to optimal casting levels, the ladle furnace also has a system for the addition of alloys. It will allow the BOP to be tapped at temperatures 125 degrees lower than at present, a development which should lengthen BOP vessel life, officials said.

Mr. Fravel said the Lorain Works has been operating two blast furnaces since June, a hot-metal production level that had not been projected to be reached this year.

Lorain is producing 48,000 tons of billet monthly for the Fairfield seamless pipe mill, Mr. Fravel said. Also, 30,000 tons of semi-finished steel is consumed by the plant's tubular operations and 45,000 tons a month by the plant's two bar mills.

Ferrous scrap exports are on an upward course

Ferrous scrap exports totaled 5.1 million short tons in the first half, 18.8 percent behind last year's exports. However, a surge in June shipments made it likely that exports in the next six months will match the second half of 1986. Scrap exports set a record in 1986.

Exports in June totaled 1.26 million tons, 97 percent more than the previous month and 40 percent more than June 1986.

Lower freight rates and increased demand by foreign consumers were two major reasons given by scrap traders for the June surge.

The monthly average in the last six months of 1986 was 898,000 tons, an average most traders felt will be equaled or surpassed in the second half of this year. They pointed to continued strong demand from South Korea, Turkey and India and the expectation that shipments to Japan, traditionally the largest consumer of United States scrap, will increase.

US Exports of Ferrous Scrap

(Short tons, reroll excluded)

Country	June '87	May '87	Apr. '87	Year to Date 1987	1986	Pct. Chg.
Canada	27,749	34,763	37,758	173,266	142,288	+21.8
Greece	0	0	0	22,191	121,741	-81.8
India	131,021	60,426	75,658	487,182	680,348	-28.4
Italy	8,612	357	57,656	100,637	163,384	-38.4
Japan	127,311	86,136	33,760	303,634	1,284,163	-76.4
S. Korea	354,687	117,855	118,784	1,237,611	1,627,689	-23.9
Mexico	51,137	30,873	15,429	147,762	247,556	-40.3
Spain	71,871	16,518	37,364	213,014	313,555	-32.1
Taiwan	16,030	45,039	47,241	230,131	281,489	-18.2
Turkey	258,335	101,370	323,877	1,170,704	600,210	+95.0
Venezuela	25,702	32,982	0	150,190	272,014	-44.8
Others	185,700	111,772	151,990	895,962	582,509	+53.8
Totals	**1,258,155**	**638,091**	**899,517**	**5,132,284**	**6,316,946**	**-18.8**

Source: Compiled by American Metal Market from data released by the Commerce Dept.

Steel restructuring costs put at $30B over next 5 years

The United States steel industry is facing restructuring and modernization costs over the next five years of $30 billion to $35 billion, according to a new steel report from Wharton Econometrics, Bala Cynwyd, Pa.

Of these costs, only $10 billion is for plant modernization, with the rest employee related, according to John Jacobson, director of basic industries for Wharton Econometrics.

The other components of the restructuring tab include $4 billion to $5 billion for pension plan restructuring, $11 billion to $15 billion for restructuring health care plans and $3 billion for direct plant closure expenses such as supplemental employee payments, penalty payments to suppliers and asset write-offs, Jacobson said in the report.

The potential expenditure of more than $30 billion, Mr. Jacobson said, "is far more than the U.S. steel industry can afford."

"We believe direct steel plant closure costs will average $75,000 per terminated employee over the next five years," said Christopher Plummer, manager of steel market analysis for Wharton Econometrics.

He identified 14 steel plants in the nation that face the "greatest threat of large-scale restructuring up to and including full-scale closure."

Those plants are Bethlehem Steel Corp.'s Bethlehem, Pa., and Johnstown, Pa., plants; Gulf States Steel Inc.'s Gadsden, Ala., plant; Lone Star Technologies Inc.'s Lone Star, Texas, plant; LTV Steel Co.'s Warren and Canton, Ohio, and South Chicago, Ill., plants; McLouth Steel Products Corp.'s Trenton, Mich., plant; Rouge Steel Co. in Dearborn, Mich.; Sharon Steel Corp. in Farrell, Pa.; and USS's plants in Fairless Hills, Pa., Loraine, Ohio, the Mon Valley Works near Pittsburgh and the South Chicago plant.

DOW POURS IT ON TO KEEP ITS LEAD

Dow Chemical's rivalry with Norsk Hydro in magnesium will heat up when Norsk expands its Quebec operation. Both view the auto business as a juicy potential market.

Production efficiencies are important when you're the world's largest producer of magnesium, but they're even more important when you've got an expanding rival breathing down your neck and a lot of rival materials to contend with.

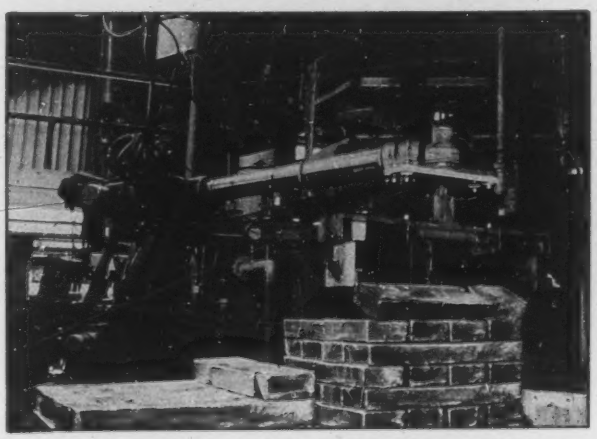
That's why Dow Chemical Co. has been spending $10 to $15 million a year on its magnesium operations in Freeport, Tex., for the past five years and why it plans to continue capital spending at a high level in the years ahead. Norway's Norsk Hydro A/S, Europe's biggest magnesium producer, is readying an ambitious capacity expansion projection in Quebec, right in the backyard of a Detroit that Dow and other magnesium producers have been trying to sell for decades. Aluminum, particularly secondary aluminum, continues to press hard for more automotive business, as do a host of other metals and materials—all of which magnesium has to nudge aside to establish a toe-hold.

When Dow went to Freeport in the early 1940s to make magnesium for the war effort, there were two strong attractions: cheap energy and an unlimited supply of raw material. Seawater was there for the taking and natural gas was a stepchild of oil production that often was flared off just to get rid of it.

That all changed with the coming of the gas pipe lines (which made natural gas a price-commanding commodity), the post-OPEC oil crises and consequent inflation.

The seawater is still there for the taking but, like its cousins in the aluminum end of the light metals business, Dow still had to get cost-competitive.

Dow Magnesium is the only producer using hydrous magnesium chloride as feed for the electrolytic cells. The magnesium ion is present in seawater at a level of about 1,200 to 1,300 parts per million. Putting it another way, Dow must process about 140 gallons of seawater to make one pound of magnesium.



Magnesium at Dow Chemical. Cell capacity has been expanded by 25 pct since 1980.

The magnesium is precipitated as magnesium hydroxide by addition of dolime or caustic in large articulated flocculators, after which it is settled in Dorr thickeners.

The spent overflow enters the plant wastewater stream, where it is neutralized and returned to the ocean, while the thickened underflow is pumped to rotary filters for dewatering, washing and reslurrying with wash water from the magnesium chloride purification step.

Next comes pumping to neutralizers for treatment with hydrochloric acid and enough sulfuric acid to precipitate excess calcium as calcium sulfate. By using the sensible heat of the exhaust gases from the acid furnaces and the heats of reaction of the magnesium hydroxide with the acid stream, 35 percent magnesium chloride brine is produced without auxiliary evaporation.

The brine is filtered to remove calcium sulfate and other solids and further purified to reduce sulfate and boron and forwarded to the dryer. The purified brine is dried by direct contact with combustion gases in a fluid bed dryer to produce 8-20 mesh granules of 73 percent $MgCl_2$. Next stop is the electrolytic cells.

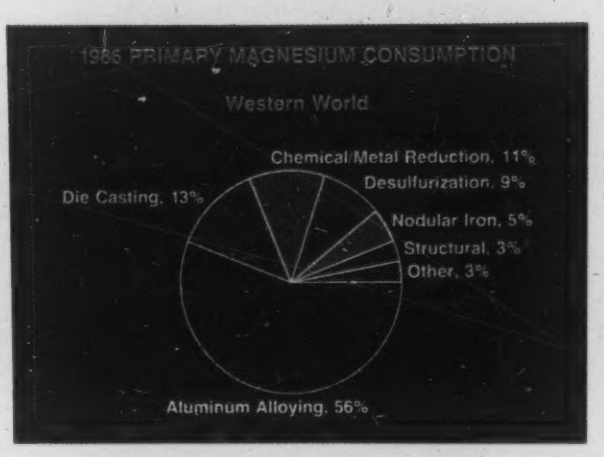
The cells are fed semi-continuously and produce both magnesium and chlorine. The dilute, wet chlorine gas is drawn into refractory furnaces and converted into HCl, which is recycled to neutralize magnesium hydroxide. Chloride losses are replaced with chlorine, HCl or magnesium chloride. Dow also has a process patent for liquefying the dilute gaseous chlorine.

Metal is pumped from the cells, which undergo continual improvement and operate at 175,000 amps, by a tractor-mounted pump twice per shift and the cells are sludged daily. The molten magnesium, 99.8 or 99.9 percent pure, is pumped from the cell through a spout in the floor to a crucible below for rail transport to the

casting building, which has two 35,000-pound holding furnaces serving four conveyor lines to the casting stations.

Dow Magnesium currently is modernizing the casting operation by adding automatic pouring and skimming, electronic inspection and robotic metal stacking.

According to Frank Leever, unit manager of Magnesium Operations Services at Freeport, magnesium cell capacity has gone up 25 percent since 1980 "and this means less cells required to make the same pounds...and less people." Mr. Leever said cell resistance has been reduced, the anodes per cell have been increased and the overall engineering of the cell itself has been upgraded for more efficiency and longer service life.



One measure of cell performance is called current efficiency. This is the amount of power consumed by the cell compared to the theoretical power. "Our current efficiency has been improving steadily since the 1940s...and has shown a 5 percent improvement since 1980. We see improvements here also in the future, since our plants have shown the capability to run in the high 80 percent range," Mr. Leever said.

According to Clifford B. Wilson, technical manager, magnesium operations, Freeport's ability to handle cell loads over 175,000 amps was achieved with a decrease in kilowatt hours per pound of magnesium.

Mr. Wilson said Dow Magnesium reduced the energy requirement of magnesium produced to 56,000 Btus per pound in 1986 from over 95,000 Btus per pound in 1975. The total energy calculation considers all energy inputs, whether from raw materials such as dolime, acid or graphite, all utility inputs, such as process water or air, and total fuel and electrical power, the latter being determined on the theoretical value of 3,413 Btus per kilowatt hour.

Another reason for honing cost efficiencies at Freeport is the substantial amount of capacity increases in various stages of planning by some of Dow Magnesium's competitors. As Dow sees it, current free world demand for magnesium runs a bit short of capacity in place and anticipated increases in consumption will fall far short of capacity projections based on the expansion projects. This, of course, means stiffer competition.

Dow Magnesium said it sees "continued slow growth (for magnesium) into the 1990s and contended that there already is capacity to spare both in the industry and in the Dow system.

According to C. W. Nelson, commercial manager for Dow's primary magnesium business, magnesium consumption should grow at a rate of less than 1 percent a year "due to near-flat or negative growth in markets such as aluminum alloying, chemical and metal reduction applications." The potential for automotive and steel desulfurization applications is promising, he said, adding that these still have a long way to go to overtake the aluminum alloying market, which last year accounted for 56 percent of western world magnesium consumption.

Dow Magnesium estimates free world magnesium capacity at 237,000 metric tons and consumption this year at 228,000 tons.

On the basis of the company's projection of a 0.7 percent annual growth rate, by 1989, when Norsk Hydro expects to have its 60,000-tons-a-year magnesium smelter at Becancour, Quebec, operating, consumption will be only 3,200 tons higher than the 1987 estimate. Norsk Hydro, meanwhile, backed its decision to go ahead with the Becancour project with a prediction that consumption will grow fast enough "to absorb a considerable amount of output from the Canadian plant."

However, the Norwegian magnesium and aluminum producer also said it intends "to phase in this production gradually, in pace with market development, (and) capacity can easily be increased as the market expands."

Dow Magnesium officials resist speculating on what planned capacity additions will go forward in the years ahead, but when asked recently what capacity changes the company was factoring into its longer-term planning, Mr. Nelson's reply was terse: "an increase of 30,000 tons—net."

With Norsk Hydro apparently determined to go ahead with its 60,000-tons-a-year project, it is quite plain that Dow expects to see some existing capacity come down.

The logical candidate is Amax Inc.'s Rowley smelter on Utah's Great Salt Lake that has had more than its share of troubles over the past few years, including a costly breaching of the dikes surrounding the evaporation ponds in June 1986.

Dow Magnesium has revised its magnesium capacity downward to 86,000 metric tons a year from 118,000 tons previously, but calls it "flexible capacity" because further efficiency improvements will permit incremental increases.

By Bob Regan

Steel composite price to be revised

The Finished Steel Base Price in the composite prices section of the Materials Prices table on this page will be revised by Nov. 1 due to a lack of necessary information. The revision will require a revamping of the basic pricing formula.

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 58.0*
Pellets (per iron unit natural)	gross-ton 59.4**
Pellets (per iron unit natural)	gross-ton 72.45-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*58.0¢—Mineral Services, Inc. as of 8/13/85. **59.4¢—Inland Steel Mining, 1/1/85 and Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.45¢—Cleveland-Cliffs as of 12/30/86. 72.5¢—U.S. Steel as of 8/16/85. 86.9¢—Oglebay Norton 3/25/82, Hanna Mining 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective September 8, 1987)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1986	To Date 1985
Net tons, in thousands	1,736	1,673	58,130	57,577
Capability Utilization Rate	81.2	78.2	76.3	65.8

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 8/2/87)	24.804	24.804	24.804	24.951
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 92.83	$ 88.17	$ 83.50	$ 74.50
No. 2 bundles	$ 58.83	$ 56.17	$ 53.50	$ 52.17

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 96.50	$ 95.50	$ 89.50	$ 76.50
No. 1 steel, Philadelphia	84.50	84.50	76.50	73.50
No. 1 steel, Chicago	97.50	84.50	84.50	73.50
No. 1 bundles, Detroit	105.50	105.50	95.50	72.50
Low Phos., Youngstown	100.50	100.50	92.50	74.50
No. 1 mach'y cast., Pgh	92.50	92.50	87.50	74.50
No. 1 mach'y cast., Phila	93.50	93.50	93.50	93.50
No. 1 mach'y cast., Chi.	108.50	103.50	103.50	103.50

*Finished Steel Composite. Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.
**Pig Iron Composite. Based on average prices for basic and foundry pig iron at representative producing points within the U.S.
***Steel Scrap Composite. Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective September 8, 1987) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	71.00	71.00	9/8/87
Copper (C)	83.00	81.00	9/8/87
Lead	42.00	38.00	7/6/87
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	240.00	243.00	9/8/87
Zinc	45.50	48.00	9/4/87

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$248.00
Beryllium-copper, per lb. cont. Be	$152.00
Beryllium 97% powder 200	$196.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$456.95
Indium, per troy oz.	$9.95
Iridium, per troy oz.	$360.00
Magnesium sticks, 10,000 lbs.	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$137.00
Platinum, per troy oz.	$594.00
Rhodium, per troy oz.	$1,285.00
Silver ingots, per troy oz.	$7.48
Titanium sponge, melt grade	$3.40-3.55
Tungsten powder, hyd red.	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

August 31—304.00 Sept. 3—304.00
Sept. 1—303.00 Sept. 4—304.00
Sept. 2—304.00

Scrap Prices
Brass Mill Scrap

(Cents per lb., over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	60	55
Yellow brass	53½	52½
Red brass	54½	50½
Comm. bronze	56	51
Mang. bronze	43	42
Free cutting rod ends	52½	51½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	58
No. 2 copper wire	49
Light copper	43

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	53
No. 2 copper wire	45
Light copper	38
No. 1 composition	46
No. 1 comp. turnings	46
Hvy. yellow brass solids	34
Hvy. yellow brass turnings	28
Radiators	31

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
New mixed clips	47	— 48
Old sheet	41	— 42
Old cast	41	— 42
Clean dry borings	42	— 43

Aluminum		
Segregated clippings	42	— 43
Mixed I.C. clips	41	— 42
Old sheets and cast	35	— 36
Borings and turnings	30	— 31
Duraluminum clippings	35	— 36

Copper and Brass		
No. 1 copper wire	50	— 53
No. 2 copper wire	41	— 42
Light copper	38	— 39
Radiators	27	— 28
No. 1 composition	42	— 43
No. 1 composition turnings	40	— 41
Cocks and faucets	36	— 37
Clean heavy yellow brass	32	— 34
Brass pipe	35	— 37
New soft brass clippings	46	— 47

Lead		
Heavy soft lead	16	— 17
Whole batteries	2	— 3
Type metal	25	— 26
Electrotype	18	— 19

Nickel		
Nickel solids	135	—145
Nickel rod ends	143	—153
Nickel sheets, clips	143	—153
Nickel turnings	31	— 41

Zinc		
New zinc clippings	16	— 17
Old diecast zinc	12	— 13

EFFECTIVE SEPTEMBER 8, 1987

(Effective September 8, 1987) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of Iron Age editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 96.00 to	$ 97.00
No. 2 hvy. melting	86.00 to	87.00
No. 1 dealer bundles	131.00 to	132.00
No. 1 factory bundles (auto)	134.00 to	135.00
No. 2 bundles	57.00 to	58.00
No. 1 busheling	129.00 to	130.00
Machine shop turnings	13.00 to	14.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	45.00 to	46.00
Low phos. punchings plate	135.00 to	136.00
Heavy turnings	86.00 to	87.00
No. 1 RR hvy. melting	104.00 to	105.00
Rails, 2 ft and under	124.00 to	125.00
Scrap rails, random lgth	100.00 to	101.00
RR specialties	124.00 to	125.00
No. 1 machinery cast	92.00 to	93.00
Cupola cast	84.00 to	85.00
Heavy breakable cast	30.00 to	31.00
Stainless:		
18-8 bundles and solids	625.00 to	635.00
18-8 turnings	525.00 to	535.00

Chicago

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	92.00 to	93.00
No. 1 dealer bundles	133.00 to	134.00
No. 1 factory bundles (auto)	131.00 to	132.00
No. 2 dealer bundles	73.00 to	74.00
No. 1 busheling	124.00 to	125.00
Shredder scrap	112.00 to	113.00
Machine shop turnings	28.00 to	29.00
Mixed borings and turnings	21.00 to	22.00
Shoveling turnings	31.00 to	32.00
Cast iron borings	44.00 to	45.00
Low phos. forge crop	129.00 to	130.00
Low phos. punchings plate 1/4 in. and heavier	150.00 to	151.00
Low phos. 2 ft and under	144.00 to	145.00
No. 1 RR hvy. melting	104.00 to	105.00
Scrap rails random lgth	100.00 to	101.00
Reroller rails	110.00 to	111.00
Rails, 2 ft and under	144.00 to	145.00
RR couplers and knuckles	96.00 to	97.00
RR car axles	131.00 to	132.00
No. 1 machinery cast	108.00 to	109.00
Cupola cast	97.00 to	98.00
Stove plate	107.00 to	108.00
Steel car wheels	124.00 to	125.00
Stainless		
18-8 bundles and solids	565.00 to	575.00
18-8 turnings	410.00 to	420.00
430 bundles and solids	140.00 to	150.00
430 turnings	85.00 to	95.00

Philadelphia

No. 1 hvy. melting	$ 83.00 to	$ 86.00
No. 2 hvy. melting	73.00 to	76.00
No. 1 dealer bundles	117.00 to	120.00
No. 2 dealer bundles	44.00 to	47.00
No. 1 busheling	110.00 to	113.00
Shredder scrap	105.00 to	108.00
Machine shop turnings	24.00 to	27.00
Mixed borings and turnings	24.00 to	27.00
Shoveling turnings	41.00 to	44.00
Low phos. 5 ft and under	100.00 to	103.00
Low phos. 2 ft punchings	116.00 to	119.00
Electric furnace bundles	118.00 to	121.00
RR specialties	91.00 to	94.00
Rails, 2 ft and under	107.00 to	110.00
Cupola cast	82.00 to	85.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	92.00 to	95.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 63.00 to	$ 64.00
No. 2 hvy. melting	60.00 to	61.00
No. 1 dealer bundles	105.00 to	106.00
No. 2 bundles	48.00 to	49.00
No. 1 busheling	103.00 to	104.00
Drop forge flashings	59.00 to	60.00
Machine shop turnings	30.00 to	31.00
Mixed borings and turnings	9.00 to	10.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	24.00 to	25.00
Heavy breakable cast	35.00 to	36.00
Mixed cupola cast	52.00 to	53.00
Automobile cast	74.00 to	75.00
Stainless		
18-8 bundles and solids	560.00 to	570.00
18-8 turnings	290.00 to	300.00
430 bundles and solids	115.00 to	125.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 83.00 to	$ 84.00
No. 2 hvy. melting	75.00 to	76.00
No. 1 dealer bundles	111.00 to	112.00
No. 2 dealer bundles	53.00 to	54.00
Machine shop turnings	21.00 to	22.00
Shoveling turnings	21.00 to	22.00
Low phos. plate	100.00 to	101.00
Electric furnace bundles	91.00 to	92.00
Galvanized bundles	88.00 to	89.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 78.00 to	$ 79.00
No. 2 hvy. melting	68.00 to	69.00
No. 1 dealer bundles	111.00 to	112.00
No. 1 factory bundles	113.00 to	114.00
No. 2 bundles	49.00 to	50.00
No. 1 busheling	103.00 to	104.00
Machine shop turnings	26.00 to	27.00
Shoveling turnings	27.00 to	28.00
Cast iron borings	26.00 to	27.00
Cut structural & plates, 5 ft and under	90.00 to	91.00
Cut structural & plates, 2 ft and under	113.00 to	114.00
Low phos. punchings plate	116.00 to	117.00
Foundry steel, 2 ft & under	69.00 to	70.00
No. 1 RR hvy. melting	78.00 to	79.00
Rails, 2 ft and under	110.00 to	111.00
Rails, 18 in. and under	112.00 to	113.00
No. 1 machinery cast	85.00 to	86.00
Mixed cast	52.00 to	53.00
Stainless		
18-8 bundles	565.00 to	575.00
18-8 turnings	295.00 to	305.00
430 bundles	120.00 to	130.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 72.00 to	$ 73.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 busheling	106.00 to	107.00
No. 1 dealer bundles	107.00 to	108.00
No. 2 bundles	35.00 to	36.00
Machine shop turnings	16.00 to	17.00
Mixed borings and turnings	16.00 to	17.00
Shoveling turnings	21.00 to	22.00
Cast iron borings	29.00 to	30.00
Low phos. plate	95.00 to	96.00
Structural and plate, 2 ft and under	100.00 to	101.00
Rails, 2 ft and under	104.00 to	105.00
Scrap rails, random lgth	84.00 to	85.00
No. 1 machinery cast	84.00 to	85.00
No. 1 cupola cast	72.00 to	73.00

St. Louis

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	84.00 to	85.00
No. 1 busheling	111.00 to	112.00
No. 1 dealer bundles	116.00 to	117.00
No. 2 bundles	77.00 to	78.00
Machine shop turnings	20.00 to	21.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	29.00 to	30.00
No. 1 RR hvy. melting	104.00 to	105.00
Rails, random length	93.00 to	94.00
Rails, 5 ft and under	110.00 to	111.00
RR specialties	104.00 to	105.00
Cupola cast	73.00 to	74.00
Heavy breakable cast	43.00 to	44.00
Stove plate	100.00 to	101.00
Steel car wheels	109.00 to	110.00
Rerolling rails	115.00 to	116.00
Unstripped motor blocks	60.00 to	61.00

Birmingham

No. 1 hvy. melting	$ 90.00 to	$ 91.00
No. 2 hvy. melting	83.00 to	84.00
No. 1 dealer bundles	89.00 to	90.00
No. 2 bundles	62.00 to	63.00
No. 1 busheling	89.00 to	90.00
Shredder scrap	107.00 to	108.00
Machine shop turnings	36.00 to	37.00
Shoveling turnings	45.00 to	46.00
Cast iron borings	40.00 to	41.00
Electric furnace bundles	82.00 to	83.00
Elec. furnace, 3 ft. & under	86.00 to	87.00
Structural and plate, 2 ft	104.00 to	105.00
Structural and plate, 4 ft	102.00 to	103.00
No. 1 RR hvy. melting	102.00 to	103.00
Scrap rails, random lgth	94.00 to	95.00
Rails, 2 ft and under	109.00 to	110.00
Angles and splice bars	98.00 to	99.00
No. 1 cupola cast	85.00 to	86.00
Unstripped motor blocks	82.00 to	83.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 76.00 to	$ 77.00
No. 2 hvy. melting	66.00 to	67.00
No. 1 dealer bundles	103.00 to	104.00
No. 2 bundles	42.00 to	43.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	20.00 to	21.00
Cast iron borings	29.00 to	30.00
Low phos. 18 in. and under	104.00 to	105.00
Rails, random length	91.00 to	92.00
Rails, 2 ft and under	109.00 to	110.00
No. 1 cupola cast	75.00 to	76.00
Heavy breakable cast	29.00 to	30.00
Drop broken cast	78.00 to	79.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 38.00 to	$ 40.00
No. 2 hvy. melting	31.00 to	32.00
No. 2 dealer bundles	20.00 to	22.00
Mixed borings and turnings	10.00 to	11.00
Machine shop turnings	4.00 to	6.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	35.00 to	36.00
No. 1 machinery cast	79.00 to	80.00
Mixed yard cast	50.00 to	51.00
Heavy breakable cast	10.00 to	12.00
Stainless		
18-8 prepared solids	400.00 to	420.00
18-8 turnings	315.00 to	335.00
430 prepared solids	100.00 to	110.00
430 solids	85.00 to	95.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 60.00 to	$ 62.00
No. 2 hvy. melting	50.00 to	52.00
No. 1 dealer bundles	88.00 to	90.00
No. 2 bundles	30.00 to	32.00
No. 1 busheling	86.00 to	88.00
Shredder scrap	78.00 to	80.00
Machine shop turnings	12.00 to	14.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	75.00 to	80.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	8.00 to	10.00

San Francisco

No. 1 hvy. melting	$ 48.00 to	$ 50.00
No. 2 hvy. melting	42.00 to	44.00
No. 1 dealer bundles	39.00 to	41.00
No. 2 dealer bundles	28.00 to	29.00
Machine shop turnings	8.00 to	9.00
Cast iron borings	8.00 to	9.00
No. 1 cupola cast	79.00 to	81.00

Los Angeles

No. 1 hvy. melting	$ 46.00 to	$ 48.00
No. 2 hvy. melting	40.00 to	42.00
No. 1 dealer bundles	38.00 to	40.00
No. 2 dealer bundles	24.00 to	26.00
Machine shop turnings	7.00 to	8.00
Shoveling turnings	8.00 to	9.00
Cast iron borings	8.00 to	9.00
Elec. furnace, 1 ft. and under (foundry)	70.00 to	72.00
No. 1 cupola cast	74.00 to	76.00

Seattle

No. 1 hvy. melting	$ 68.00 to	$ 70.00
No. 2 hvy. melting	59.00 to	61.00
No. 2 bundles	41.00 to	42.00
No. 1 cupola cast	89.00 to	90.00
Mixed yard cast	80.00 to	82.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 81.00
No. 2 hvy. melting, cut 2 ft and under	71.00
No. 1 dealer bundles	96.00
No. 2 bundles	61.00
Mixed steel scrap	56.00
Bush. new fact. prep'd	91.00
Bush. new fact. unprep'd	74.00
Machine shop turnings	30.00
Short steel turnings	32.00
Mixed borings and turning	19.00
Cast scrap	90.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 84.00 to	$ 85.00
No. 2 hvy. melting	74.00 to	75.00
No. 2 bundles	46.00 to	47.00
Machine shop turnings	31.00 to	32.00
Crushed turnings	41.00 to	42.00
Shredder scrap	90.00 to	91.00
Cut structural plate, 2 ft and under	99.00 to	100.00
Cut structural plate, 5 ft and under	89.00 to	90.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	94.00 to	95.00